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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,246	02/24/2004	Helmut Lucke	450100-03060.1	8911

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EXAMINER
LERNER, MARTIN

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		10/785,246	LUCKE ET AL.
		Examiner	Art Unit
		Martin Lerner	2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 8* is/are pending in the application.
     4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1 to 8* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>24 February 2004</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
     a)☒ All   b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☒ Certified copies of the priority documents have been received in Application No. <u>09/804,354</u>.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Page 18 of the Specification refers to a conventional apparatus.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because bus 101 does not have a reference numeral in Figure 7. Page 36 of the Specification refers to a bus 101. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1 to 4 and 6 to 8 are rejected under 35 U.S.C. 102(b) as being anticipated

by *Kanevsky et al.*

Regarding independent claims 1, 7, and 8, *Kanevsky et al.* discloses a speech

recognition apparatus, method and computer program, comprising:

"extraction means for extracting features of said speech from said speech" – a

speech recognition system receives an acoustic string 21 of feature vectors

representing acoustical speech information (column 4, lines 41 to 43: Figure 2);

implicitly, all speech recognition begins by extracting feature vectors from input speech;

"calculation means for calculating said score using said features on the basis of a

dictionary in which unknown-word-forming elements, which are elements forming an

unknown word, for classifying an unknown word by an attribute thereof and words for

the object of speech recognition are entered" – an acoustic string 21 of feature vectors

enters acoustic module 22, which attaches to each vocabulary component (prefix, stem,

or ending) ("unknown-word-forming elements") its acoustic model; these acoustic

models are sorted in accordance with their scores and a list of the most probable

components is selected in Fast Match Module 23 (column 4, lines 41 to 58: Figure 2); a

vocabulary 11, such as a dictionary ("a dictionary"), is used to create sub-vocabularies

of components 12 that comprise stems 12a, endings 12b, and prefixes 12c (column 4,

lines 14 to 27: Figure 1); some elements in vocabulary 11 are complete words (e.g.

stems) ("words for the object of speech recognition") and other elements in vocabulary

11 are word components (e.g. prefixes and endings); each word 502 from vocabulary

501 is split by means of splitter 503 into a "stem ending" pair 504; this pair is analyzed

by linguistic module 505 to classify its characteristics (part of speech of the original

word, morphological characteristics, e.g. plural, whether it is an ending, suffix or end,

and context characteristics) (column 6, lines 31 to 47: Figure 5) ("for classifying an

unknown word by an attribute thereof"); LM statistics 13 provide a probability of word

components dependent upon the linguistic qualities (e.g. part of speech and whether it

is an ending or suffix) contained in ending for the particular language in question

(column 3, lines 8 to 18); thus, an "attribute", such as part of speech, of a word

component affects calculation of the score;

"selection means for selecting a series of said words, which represents a speech

recognition result, on the basis of said score" – LM statistics 13 are used in stack

decoder 25 to choose the most probable path of word components; the final decoded

text 26 is obtained by connecting word components into words from vocabulary 11

(column 4, lines 51 to 63: Figure 2).

Regarding claim 2, *Kanevsky et al.* discloses each word 502 from vocabulary 501

is split by means of splitter 503 into a "stem ending" pair 504; this pair is analyzed by

linguistic module 505 to classify its characteristics (part of speech of the original word,

morphological characteristics, e.g. plural, whether it is an ending, suffix or end, and

context characteristics (column 6, lines 31 to 47: Figure 5) ("for classifying an unknown

word by a part of speech thereof").

Regarding claim 3, *Kanevsky et al.* discloses each word 502 from vocabulary 501

is split by means of splitter 503 into a "stem ending" pair 504; this pair is analyzed by

linguistic module 505 to classify its characteristics (part of speech of the original word, morphological characteristics, e.g. plural, whether it is an ending, suffix or end, and context characteristics (column 6, lines 31 to 47: Figure 5) ("wherein in said dictionary, suffixes are entered as said unknown-word-forming elements").

Regarding claim 4, *Kanevsky et al.* discloses the pair is analyzed by linguistic module 505 to classify its characteristics (part of speech of the original word, morphological characteristics, e.g. plural, whether it is an ending, suffix or end, and context characteristics for each letter in the "stem ending" pair (e.g., before "hard" or "soft" phoneme); these characteristics are used by letter to phoneme mapper 506 that maps each letter to a phoneme (column 6, lines 31 to 65: Figure 5) ("wherein in said dictionary, phonemes which form an unknown word are entered together with said suffixes").

Regarding claim 6, *Kanevsky et al.* discloses a speech recognition system comprising a vocabulary 11, such as a dictionary ("said dictionary"), is used to create sub-vocabularies of components 12 that comprise stems 12a, endings 12b, and prefixes 12c (column 4, lines 14 to 27: Figure 1).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kanevsky et al.* in view of *Muthusamy et al.*

Kanevsky et al. does not expressly disclose that words are classified by a language in a dictionary, although applications to a plurality of languages are presupposed, e.g. Slavonic languages, Japanese languages, French and Italian languages. (Column 1, Line 7 to Column 2, Line 24) Still, while *Kanevsky et al.* is concerned mainly with the Russian language, it is noted that language model statistics "are based on a combination of stems and endings and will capture the information of context and other linguistic qualities contained in endings *for the particular language in question*". (Column 3, Lines 14 to 18) Thus, *Kanevsky et al.* suggests probabilities for stems and endings are language dependent. *Muthusamy et al.* teaches an automatic language identification system where, given input speech in an unknown language, a plurality of speech recognizers 31a-31n, for English, Spanish, and Japanese languages, determine the likelihood that the speech came from the phonetic elements of each language. Each phoneme is given a likelihood score, and the highest score becomes the selected language. (Column 3, Lines 50 to 61: Figure 3) It would have been obvious to one having ordinary skill in the art to classify stems and endings ("unknown-word-forming elements") in the vocabulary 11 ("said dictionary") of *Kanevsky et al.* into one of a plurality of languages as suggested by *Muthusamy et al.* for the purpose of providing a multilingual speech recognition system because language model statistics for stems and endings depend upon the particular language in question.
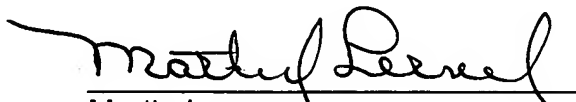
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
11/30/05

Martin Lerner
Examiner
Group Art Unit 2654